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ABSTRACT

This study examines orthography as one source of non-targetlike phonetic output and focuses on the acquisition by speakers of American English vowel reduction in Russian, a salient feature of the Russian phonetic system that is not reflected in the graphics of the Cyrillic script. The researchers conducted a structured interview and administered reading, arithmetic, and listing-from-memory tasks that included the same lexical items as those elicited in the interview. The following conclusions were drawn from the data: (1) a non-targetlike pattern of vowel reduction can be attributed to the influence of the graphic representations of lexical units; (2) native-speaker-non-native speaker interaction influences phonetic accuracy; and (3) the pattern of vowel reduction for highly familiar words remains constant across various tasks. (Author/JL)

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Orthography in the target language: Does it influence interlanguage phonology?

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This study examines orthography as one source of non-targetlike phonetic output and focuses on the acquisition by speakers of American English of vowel reduction in Russian, a salient feature of the Russian phonetic system which is not reflected in the graphics of the Cyrillic script. The researcher conducted a structured interview and administered reading, arithmetic, and listing-from-memory tasks which included the same lexical items as those elicited in the interview. She drew the following conclusions from the data: 1) A non-targetlike pattern of vowel reduction can be attributed to the influence of the graphic representations of lexical units; 2) NS-NNS interaction influences phonetic accuracy; 3) The pattern of vowel reduction for highly familiar words remains constant across various tasks.

Introduction

Research in interlanguage (IL) phonology has been developing in two main directions: L1 transfer, and the influence of universal articulatory and perceptual restraints. Transfer from L1 is acknowledged by many researchers to be the most influential factor shaping IL phonology. Ioup, for example, presents strong evidence to "support the commonly held belief that L1 interference is more prevalent in phonology than in syntax" (1984:13). Major (1987) claims that phonetic and phonological similarities between L1 and L2 are important factors influencing the rate and acquisition order of L2 pronunciation.

The role of transfer, however, has been somewhat downplayed ever since Contrastive Analysis (CA) came under attack because of methodological weaknesses (James, 1989:370). According to Lonna Dickerson (1974), CA fails to explain the variable rules of interlanguage phonology because transfer itself, both positive and negative, works so variably. For example, the same L1 feature transfered into L2 may result in a range of phonetic productions depending upon the individual speaker and

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upon the context and style used (Dickerson, 1975). The impact of style on interlanguage phonology will be discussed below in the section on method.

Variability in L1 transfer can be explained, in part, by Eckman's Markedness Differential Hypothesis (MDH) (1977, 1981a, 1981b). MDH is based on the assumption that there is a universal scale of markedness which is presumably valid for all languages. Markedness implies inherent difficulty and infrequency of use. According to MDH, the probability of L1 transfer into L2 depends on whether corresponding areas in L1 and L2 are marked or not. Eckman's Interlanguage Structural Conformity Hypothesis, according to which "the universal generalizations that hold for the primary languages hold also for interlanguages," (1991:24) found experimental support for at least two implicational universals.

This study will investigate a third source of non-targetlike phonetic productions, besides transfer and language universals, in the acquisition of Russian as a foreign language by the native speakers of American English (AE). Learning Russian in a formal classroom setting puts heavy emphasis on reading as a source of input. This has implications for IL phonology, which is inevitably affected by the written representations of the meaningful units in the target language.

The acquisition of one complex phenomenon found in Russian--vowel reduction will be analyzed. In standard Russian, о or е sound types do not occur in unstressed position. In unstressed position о is pronounced as а and е is pronounced as і. The unstressed я (a letter which designates an а vowel after a palatalized or soft consonant)[1] is also pronounced as an і. Generally speaking, the orthography of standard Russian does not mark the reduction of vowels in unstressed position.

The rules of vowel reduction and the discrepancies between pronunciation and graphic representation are taught at the very beginning of first year Russian. However, as is often the case, "taught" does not necessarily mean "learned" and even less--"acquired." Despite explicit instruction to the contrary, students still memorize part of the vocabulary in graphic rather than phonetic representation. What usually happens is this: high-frequency words, often used in oral output both by the teacher and the students, become memorized in their sound shape. Other, less frequently used words remain stored in the memory in their graphic representations.

Eventually, most non-targetlike forms disappear, unless fossilization takes place at a relatively early stage. An immersion program in Russia usually proves to be especially helpful. In a phonetic study of the oral performance of American learners of Russian, the researcher has shown (Ogorodnikova, 1990) that, after a semester of

study in Russia, Oral Proficiency ratings have increased from Novice-High to Advanced.[2]

American English also has vowel reduction; unstressed vowels may lose their phonetic quality and become a schwa. There are no articulatory constraints involved. Vowel reduction in Russian, as described above, involves pronunciation of a and i--vowel types not only familiar to native speakers of American English, but also belonging to the universal triangle of vowels found in almost every known language of the world (Trubetzkoy, 1969:99-120).

This pilot study was designed, first of all, to examine how Russian vowel reduction enters the IL of American learners: Does it cause difficulties resulting in non-targetlike productions? What are the sources of these productions? Exactly what factors influence the NNS's linguistic behavior in each particular case of vowel reduction? How do NS-NNS interactions influence the NS's phonetic output? Studies devoted to phonological/phonetic aspects of NS-NNS interactions are very scarce (Zuengler, 1985).

The preliminary hypotheses to be tested are:

1. A non-targetlike pattern of vowel reduction involving pronunciation of unstressed vowels as they are spelled will be found in both reading and in spontaneous speech.

2. There will be more non-targetlike productions in the NNS's independent output than in her output repeating key words from the NS's previous utterance. In the latter case, the NNS can adjust her pronunciation using a model for imitation.

3. There will be different occurrences of non-targetlike patterns of vowel reduction in pre-stressed and post-stressed position. It is predicted that more non-targetlike productions will occur in post-stressed position for two reasons. First, because the end of the utterance (word, phrase, sentence) is usually pronounced less intensively than its beginning. For example, active lip rounding for a final o will tend to disappear. Second, inflected word endings, which contain important grammatical information, are especially drilled in the classroom and tend to be pronounced in an exaggerated way with non-targetlike vowel reduction.

4. The pattern of vowel reduction will be different for different tasks. First, these tasks require and allow for different amounts of attention to the phonetic shape of the utterance. Second, reading with a graphic representation visually present may result in pronunciation more based on orthography than on sound shape.

Method

For the purposes of this study, a technique of data collection has been developed which takes into account the on-going debate concerning the influence of speech styles and various tasks on phonetic performance in L2 as well as the type of data which most accurately reveals the NNS's interlanguage. This technique compares the NNS's performance in a structured interview with her performance on a list-reading, a simple addition, and a list-recitation task.

Tarone was one of the first to encourage gathering spontaneous speech data (1978:18). In her view, IL "appears in its most systematic, consistent form only when speakers pay the least amount of attention to the form of their language" (1982b:69). "...Styles range from the superordinate style (in which the most attention is paid to language form) to vernacular style (in which the least attention is paid to language form)" (1982b:69). Vernacular style is likely to be found in spontaneous speech. To elicit speech data which is as spontaneous as possible, a structured interview on a range of topics familiar to the subject was developed .

Beebe (based on Labov 1966, 1972) shows that there is a much higher rate of phonetically targetlike productions in the listing data (reading lists of words) than during the interview conversation. Listing supposedly creates optimal monitor conditions (1980:443). A reading-list is included, however, for two reasons. First, Sato has found a greater incidence of targetlike phonetic productions occurring in the "vernacular style" (conversation), than in the "careful style" (reading). She has found that "the task of text recitation clearly required a high degree of attention to language form on the part of the learner. Yet the percentage of targetlike word-final cluster production on this task was less than half that for conversation for one of the samples" (1985:195). Sato provides what seems to be a probable explanation of her controversial findings: Tasks which require a great deal of attention may not favor phonetic monitoring which ranks low on the list of demands on the learner. The second reason for including a reading-list is the assumption that the influence of orthography may manifest itself in a different way when the actual spellings are visually present.

Since the influence of task type on targetlike production is controversial, four elicitation techniques were used: a structured interview, reading, listing-from-memory, and solving simple addition problems. The structured interview allows for collecting a reasonably representative body of quasi-natural conversation between the researcher and an American learner of Russian.

First, the basic vocabulary of first-year Russian was chosen because it generally consists of words that have the highest frequency of use. Bryn Mawr College's first-year textbook *Russian: Stage One* (Bitekhtina, et al., 1991) was used because the subject is a Bryn Mawr student. Unfamiliar lexical items were avoided. The fact that the words used for the data elicitation here are on the list for first year Russian implies that they are actively known in second and consecutive years. Words, mostly nouns and adjectives, which had unstressed о, е and я were chosen.

Second, a list was drawn up of conversational topics appropriate for Novice-High and Intermediate level speakers on the Oral Proficiency Interview (OPI) scale. This scale consists of four basic levels: Novice, Intermediate, Advanced, and Superior. Novice speakers are not able to sustain a natural conversation; they usually speak in words and word clusters and do not reach the sentence level. Intermediate speakers can talk about personal topics. The higher the level of proficiency on the OPI scale, the less the amount of non-targetlike phonetic realizations. According to the OPI standards, a superior speaker, by definition, cannot have a strong accent. Thus, intermediate level of oral proficiency seems to be the most acceptable for our purposes.

Third, an outline of the interview was prepared, based on chosen key words which develop the following topics:

Family
Personal dates (date of birth, age in different grades, etc.)
Daily schedule for each day of the week
Seasons
Weather
Food
Health

The researcher conducted the interview and guided the conversation in order to get the subject to produce the required lexemes. In some cases, the NNS produced the chosen key words herself. For example, when asked to describe her routine for each day of the week, she produced the desired names for the days of the week. Discussion of seasons and weather involved the names of the months and types of weather, etc. In other cases, the researcher would ask questions already containing the target key word. For example, "Does your **father** work?" (**father** being the key word). The subject would answer: "Yes, my **father** works, but my mother does not."

Fourth, after the interview, the subject was asked to perform several tasks in order to compare her pronunciation in the interview with:

Reading: words and phrases and numbers from 1 to 21;
Recalling lists from memory: days of the week, months;
Simple addition involving numbers from 1 to 21.

Items included in these tasks were supposed to have occurred in the NNS's speech during the interview. The interview as well as the other tasks were tape-recorded.[3] In the transcript, the interviewer's questions were included in order to determine whether a key word in the NNS's output was a repetition of the trigger in the preceding utterance of the NS or was independently produced by the NNS.

Written instruction in English was given to the subject before the session. The subject is a third year Russian student with a probable OPI rating of Intermediate-Low.

The tape-recording of the interview was analyzed by the researcher, a trained phonetician. All deviations from the standard pattern of vowel reduction were marked on the transcript with the help of phonetic signs. In addition, cases where the NNS repeated a key word from the NS's previous utterance were noted. The following data was collected.

1. Raw scores for non-targetlike pronunciation of the following three vowels: o instead of a; e instead of i; 'a instead of i
2. Raw scores and percentages of non-targetlike productions for both the NNS's independent output and for her output repeating the key word from the NS's previous utterance.
3. Percentages of total numbers of the NNS' non-targetlike and targetlike productions for pre-stress and post-stress positions.
4. Similar computations for the NNS's productions on the reading, listing-from-memory and simple addition tasks.

Results

Tables 1 and 2 show the raw scores for cases of non-target like vowel reduction in spontaneous speech (the interview).

Table 1 Independent output

	Pre-stress position			Post-stress position		
	Non-target	Target	Total	Non-target	Target	Total
o-/->a	23	50	73	11	6	17
e-/->i	19	17	36	10	29	39
'a-/->i	5	-	5	1	3	4
Total	47	67	114	22	38	60

Table 2 Repeating a key word

	Pre-stress position			Post-stress position		
	Non-target	Target	Total	Non-target	Target	Total
o-/->a	13	51	64	3	10	13
e-/->i	10	19	29	4	17	21
'a-/->i	1	1	2	-	-	-
Total	24	71	95	7	27	34

Table 3 summarizes total results (last row) from Tables 1 and 2 converted into percentages in order to demonstrate what percentage of the total number of cases of vowel reduction was non-targetlike and what percentage was targetlike in obligatory contexts for vowel reduction.

Table 3 Vowel reduction in obligatory contexts

	Independent output		Repetition of NS's key word	
	Non-target	Target	Non-target	Target
Pre-stress	41%	59%	25%	75%
Post-stress	37%	63%	21%	79%

Analysis of results in Table 3 suggests that there might be a tendency towards more targetlike pronunciation when the NNS repeats the key word from the NS's previous utterance as compared with her independent output. This in itself, if corroborated by subsequent research involving representative data and using the appropriate statistics, may be an interesting finding. It highlights the influence of interaction upon the adjustment of the NNS's phonetic output. But, as mentioned above, American learners do not seem to have many intrinsic articulatory difficulties in achieving a targetlike pattern of vowel reduction in Russian. In this study, the pronunciation of a and i vowel types was required, which is not difficult for a native speaker of AE. On the other hand, if the target vowel had been 'ы' which is relatively difficult for American learners of Russian, the pattern of non-targetlike productions probably would have been different

33% of all the NNS's productions of words with vowel reduction in the interview were non-targetlike. This relatively high percentage of non-target phonetic realizations cannot be dismissed.

Table 4 contains results for additional tasks performed by the NNS: reading, simple addition problems and listing from memory. Percentages were computed only for pre-stress position. It is not surprising that there are very few cases of post-stress

reduction-- this material was controlled by the researcher and post-stress reduction was deliberately not included because post-stress reduction occurs most often in verbal endings or in noun endings in oblique cases and at this stage the researcher is mainly interested in the phonetic shape of lexical morphemes.

Table 4 Vowel reductions in reading, addition, and listing

	Pre-stress position			Post-stress position		
	Non-target	Target	Total	Non-target	Target	Total
Reading	17 (43%)	23 (57%)	40	3	1	4
Addition	13 (46%)	15 (54%)	28	-	6	6
Listing	06 (50%)	06 (50%)	12	-	-	-

The results in Table 4 do not allow one to draw any definite conclusions because of the small numbers. However, I may speculate in the most tentative way that addition and listing from memory show similar patterns of vowel reduction as the NNS's independent output in the interview, whereas the NNS's output adjusted to the NS's pronunciation contains the least non-targetlike productions of either the interview or the tasks.

My main interest is in investigating the influence of orthography on pronunciation. One would expect that reading, with its direct, visual contact with the written forms of the words, would result in a higher incidence of non-targetlike productions, but my results do not confirm this. If later, more representative samples also show that reading does not show significantly higher levels of non-targetlike production, then we can speculate that for high-frequency words (such as were used in this study) the NNS's pronunciation of words while reading is based upon recognizing and recalling from memory their correct pronunciation as often modeled by the teacher and not upon the phonological decoding of orthographic representations.

Another possible explanation for why there are not more non-targetlike productions during reading is that reading allows for phonetic monitoring and, particularly, favors monitoring for reading rules. This relates to the question of phonetic monitoring in conversation. There is no simple answer in light of the controversial data discussed above pertaining to this issue.

According to Tarone (1982) and Beebe (1980), informal spontaneous conversation presumably involves less monitoring. On the other hand, the pressure of communication is extremely high for intermediate speakers. Conversation for an

intermediate speaker inevitably implies a lot of monitoring: synthesizing grammar and vocabulary in order to produce comprehensible output. This, in turn, makes phonetic monitoring less probable, as all the channels are already busy. The situation becomes even more complicated when we try to account for words and expressions that are memorized by the NNS as chunks in their targetlike form as modeled by the teacher such as the oft-repeated Russian phrase for "Repeat, please!"

The task of citing lists from memory seems to entail somewhat different psycholinguistic requirements than those of an interview situation which requires the production of spontaneous speech. It involves practically no grammatical or linguistic creativity: It provides a "pure" case of retrieving words from memory and might give insights into how lexical items are stored there.

The purpose of the additional tasks was to compare the pronunciation of the same lexical items across different tasks. Results of this study suggest that the pattern of vowel reduction for highly familiar words remains constant across various tasks. This is clear from the NNS's pronunciation of numbers, days of the week, and months.

Discussion

This study was conceived in order to demonstrate quasi-experimentally that IL phonology of American learners of Russian is influenced by the graphic representations which are in conflict with the phonetic shape of the lexical units.

It has tried to demonstrate that there is a systematic pattern of non-targetlike vowel reductions not induced by any intrinsic articulatory constraints on the part of a native speaker of American English. AE also has vowel reduction as well as a and i vowel types in its phonetic system.

The results obtained in this study suggest that non-targetlike production scores are somewhat higher for the NNS's independent output than for her repetitions of the key words from the NS's immediately preceding utterance.

Discrepancy in the results for vowel reduction in pre-stressed and post-stressed position were too small to show that post-stressed position favors either non-targetlike or targetlike productions.

The small amount of data obtained from the reading and listing tasks does not permit any meaningful quantitative comparisons. However, superficial analysis of this data encourages further investigation of the following hypothesis: as far as highly familiar vocabulary is concerned, tasks requiring different amounts of attention and therefore presumably different amounts of phonetic monitoring may not result in

different rates of non-targetlike productions. This may not hold true for less familiar words.

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[1] Consonant palatalization is traditionally marked in Russian phonetics with a " ' ".

[2] For description of ratings see Byrnes, et al (1989).

[3] Two interviews were conducted using the same method and were recorded. In this paper, we will discuss only one of them.

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